

DAVIS-BOURNONVILLE COMPANY

JERSEY CITY, NEW JERSEY, U. S. A.

Cable Address
"DAVACO" Jersey City
Iron Age Code on page 8

Manufacturers of Oxy-Acetylene Welding and
Cutting Apparatus

Other Code Used
Western Union

Products

ACETYLENE GENERATORS AND COMPRESSING
PLANTS

OXYGEN AND HYDROGEN PLANTS

OXY-ACETYLENE AND OXY-HYDROGEN WELDING
AND CUTTING APPARATUS



TRADE MARK

tity of free gas. Several sizes of generators are made to provide capacity for full working period. Carbide is fed automatically to a large volume of water. The rise and fall of pressure in the tank, controlled by pressure diaphragms, operates the feeding device. Generators do not require attendance except for recharging.

Descriptive

The process of welding and cutting with oxygen and acetylene, and oxygen and hydrogen, is successfully employed in practically every branch of the metal-working industry—in the manufacture of metal products, for welding tubing, steel barrels and containers, in general repair work and construction, in foundries and steel mills, shipyards, locomotive and car shops, mines, and scrap yards.

Davis-Bournonville apparatus has been developed from the original French positive pressure system, distinguished from the low-pressure injector system, and successfully applied to the welding and cutting of extremely heavy sections, as well as to the lightest sheet-metal work. It was purchased extensively by the U. S. Government for the American Expeditionary Forces of the army and navy, and by the Emergency Fleet Corporation for shipyards. It is used in all U. S. navy yards, and by the largest metal-working plants in the United States.

Capacity

The range of equipment comprises complete systems for the production and distribution of acetylene, oxygen, and hydrogen, and for welding and cutting with stationary and portable apparatus, with capacity for any requirement and for expansion by adding units. Special machines have been developed for welding tubing, barrels, and containers and small parts, and for mechanical cutting.

Acetylene Generators

The positive-pressure type of welding and cutting torches requires that both gases should be under independent medium pressure. The Davis Acetylene Pressure Generator was designed for this purpose. It is self-contained, compact and automatic. Acetylene is generated and supplied direct to pipe line, under medium pressure up to 15 lb. (1 kg./cm²) as it is required; therefore no separate storage tank is required. There is no hazard from storing a quan-

TABLE I. GENERATOR CAPACITIES

No.	Carbide Capacity		Water Capacity		Acetylene per Hour		Code Word
	lb.	kg.	gal.	litre	cu.ft.	m ³	
C 25	25	11	25	95	25	0.71	GRABE
C 50	50	23	50	189	50	1.42	GRANT
C100	100	45	100	379	100	2.83	GRACK
C200	200	91	200	757	200	5.66	GRALO
C300	300	136	300	1136	300	8.50	GRAJI

For greater requirements generators are installed in batteries.

Portable generators, for transportation on trucks, Nos. C25-P and C50-P, have same capacity as Nos. C25 and C50.

Acetylene Compressing Plants

This acetylene generating and compressing plant is designated the "Navy Type" because it was originally designed for U. S. navy yards, to meet the requirements for combined supply of acetylene under pressure to pipe lines for shop work and for compression into portable tanks. The system comprises a special acetylene pressure generator, gasometer, purifying apparatus, and three-stage water-cooled com-

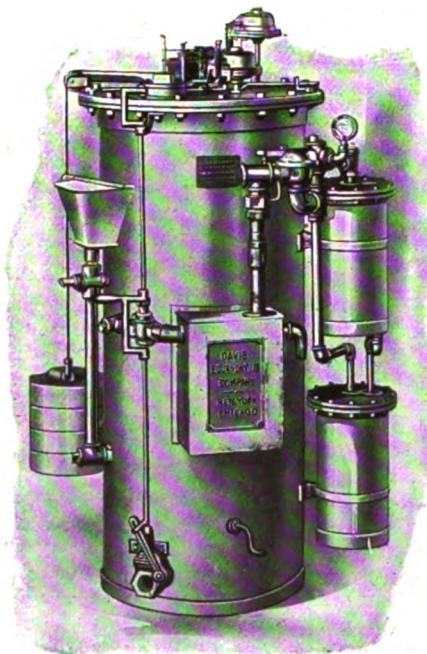


FIG. 1. NO. C50 ACETYLENE GENERATOR

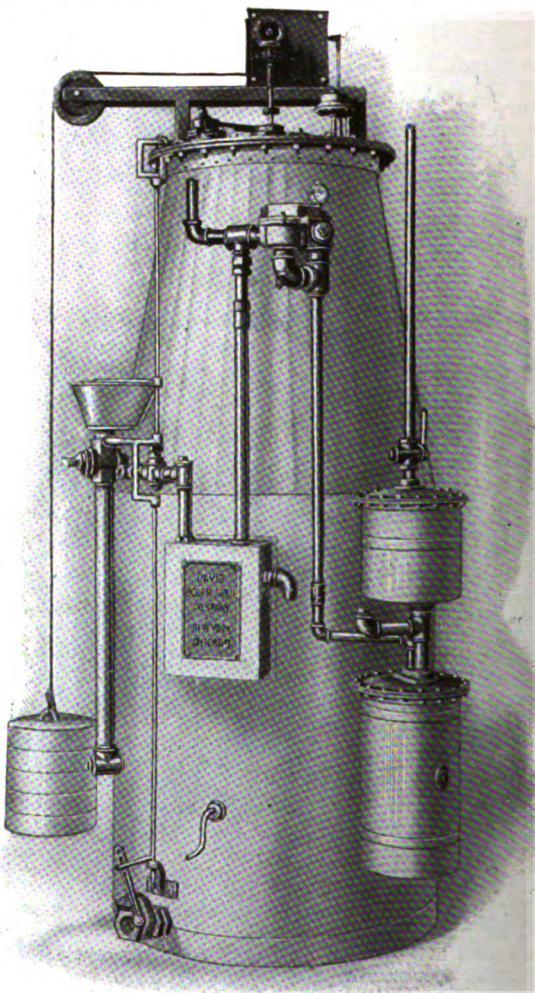


FIG. 2. NO. C300 ACETYLENE GENERATOR

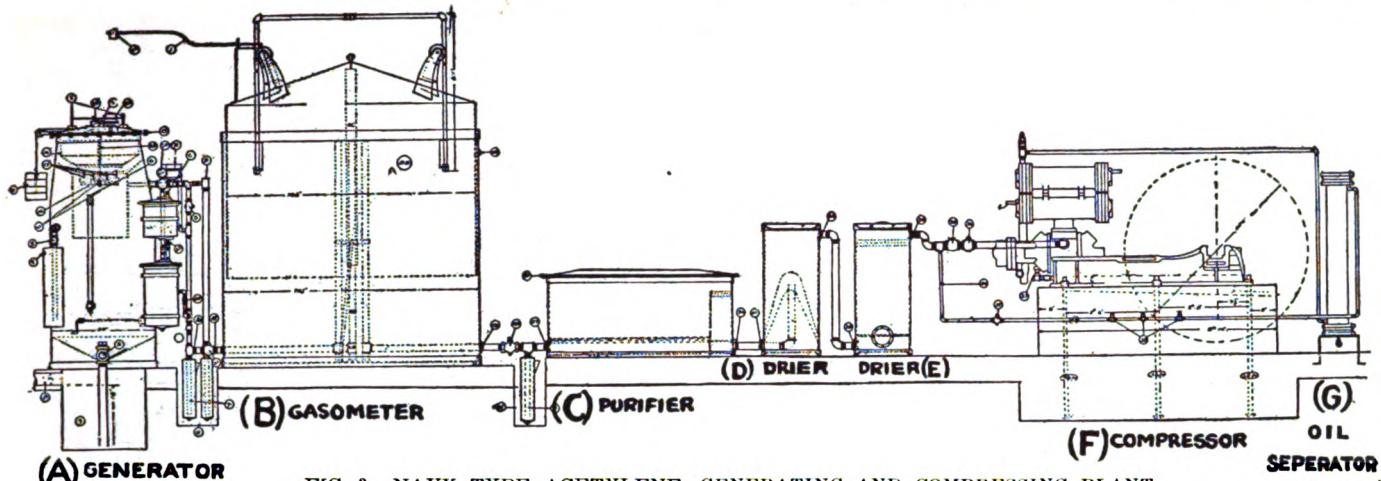


FIG. 3. NAVY TYPE ACETYLENE GENERATING AND COMPRESSING PLANT

pressor. The generators are made in three sizes, Nos. C100-N.T., C200-N.T., and C300-N.T., of the same capacity as the stationary generators of similar number. Acetylene is supplied direct to pipe line under working pressure up to 15 lb. (1 kg./cm^2), with an auxiliary supply at low pressure to the gasometer, from which it is taken through the purifying system to the compressor, for compression into portable tanks. The portable tanks are filled with a porous substance, saturated with acetone, in which the acetylene is absorbed, the tank containing no free gas. These plants are especially designed for large concerns needing portable outfits and for stationary shop operation.

Oxygen and Hydrogen Plants

Our oxygen and hydrogen plants are constructed on the unit principle, for any required volume of either oxygen or hydrogen, permitting any required expansion. The gases are produced by electrolysis of water, with output of one volume of oxygen and two volumes of hydrogen. They are collected in the standard type of gas holder, and are then compressed in either stationary or portable storage tanks. Many installations call for both portable and stationary tanks, the gas being piped from the latter, under pressure,

to where it may be required. Two sizes of electrolyzers are made, No. C5-B, with hourly production of approximately 4 cu. ft. ($0,11 \text{ m}^3$) of oxygen, and 8 cu. ft. ($0,23 \text{ m}^3$) of hydrogen, operating on 500 amperes current, and No. C6-B, with double the production, on 1000 amperes. Oxygen of above 99% purity, and hydrogen of approximately 100% purity, are practically assured with these electrolyzers. A feature of these plants which is of inestimable value is the Davis-Bournonville system of full automatic control, which starts the compressor when the gas holder is full, stops compression when storage tanks are full, and shuts down the motor-generator, stopping generation of gases, when both gas holder and storage tanks are full. When gas is drawn from holder and storage tanks, generation is automatically begun.

Welding and Cutting Torches

All Davis-Bournonville torches employ both gases under medium, independent pressure, varying from 1 to 8 lb. ($0,07$ to $0,56 \text{ kg./cm}^2$) acetylene pressure, and from 2 to 24 lb. ($0,14$ to $1,7 \text{ kg./cm}^2$) oxygen pressure in the welding torches. Oxygen pressure for cutting varies from 10 to 150 lb. ($0,7$ to $10,5 \text{ kg./cm}^2$) pressure, according to the

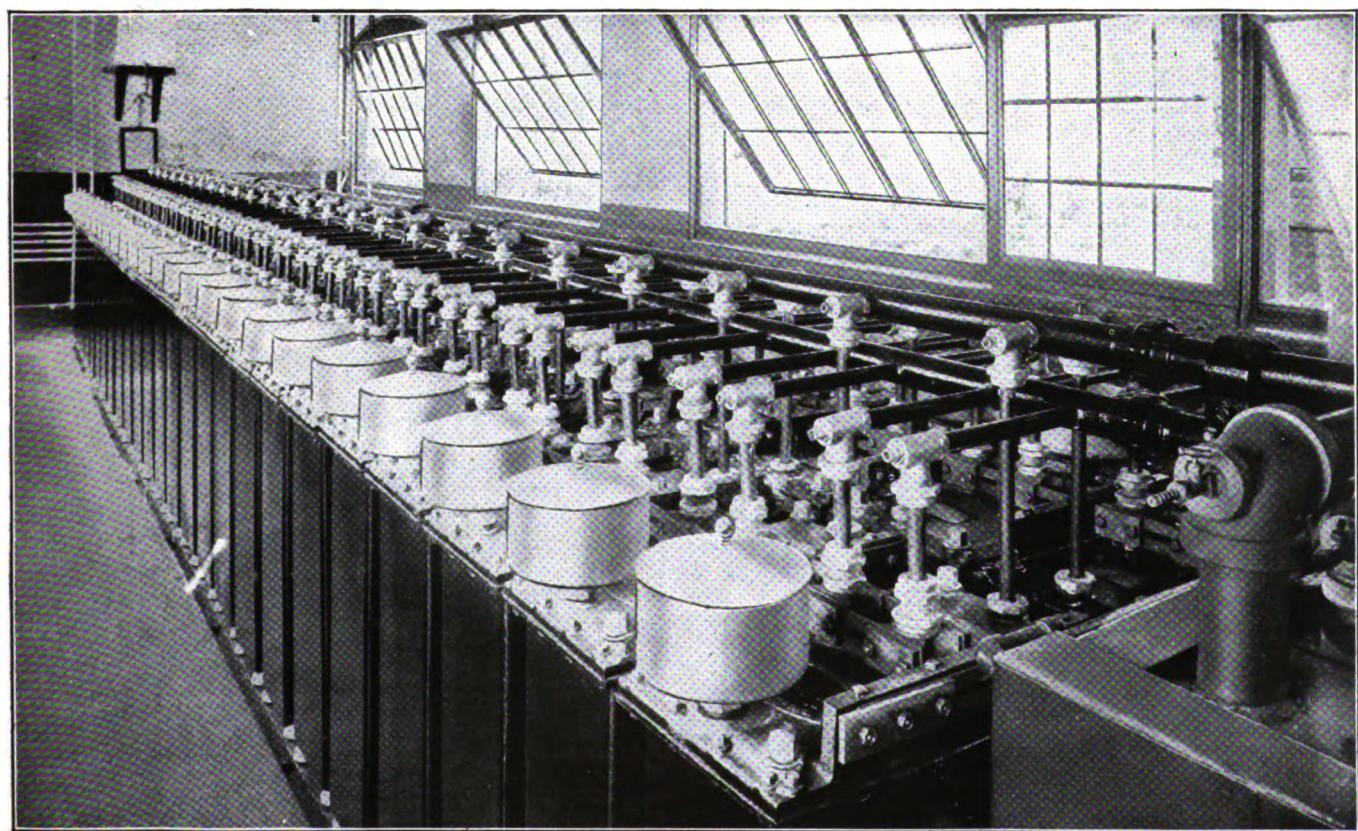


FIG. 4. ELECTROLYTIC OXYGEN PLANT

thickness of metal being cut. Torches have interchangeable tips, of graduated capacity for different thicknesses of metal, and are operated with a determined pressure of each gas for each size of tip, insuring maintenance of the required proportions of each gas, and effective combustion in the neutral flame essential to a good weld.

Standard hand torches are No. C453 (small) and No. C146 (large) welding torches, and Nos. C3000 and C2018 cutting torches. Other sizes and various styles are made for special purposes.

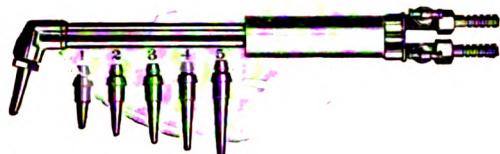


FIG. 5. NO. C453 WELDING TORCH



FIG. 6. NO. C146 WELDING TORCH

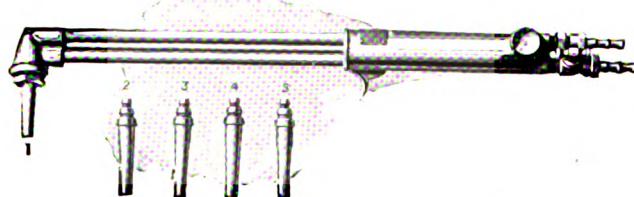


FIG. 7. NO. C3000 CUTTING TORCH

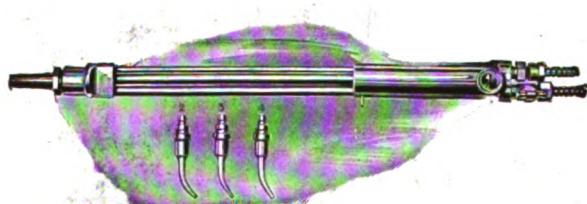


FIG. 8. NO. C2018 CUTTING TORCH

Portable Outfits

The Davis-Bournonville portable welding and cutting outfit comprises a special two-wheel hand truck carrying two gas cylinders, with pressure regulators, hose, and torch. The acetylene cylinder contains the gas compressed and dissolved in acetone. The acetone is absorbed in a porous filler that completely fills the cylinder space, and prevents any dangerous accumulation of free gas under heavy pressure. The oxygen supply is furnished from a standard high-pressure oxygen cylinder. These cylinders may be recharged at central compressing plants.

The truck is provided with means for holding the cylinders securely in place, and it may be safely moved from one department to another without removing the regulators, if ordinary care is taken.

Large manufacturing plants using quantities of gases provide their own acetylene and oxygen generators and com-

pressors for recharging cylinders, thus saving on initial cost and transportation.

Where the full working period is small, purchasers will find this portable outfit very satisfactory. It requires practically no attendance, except for recharging.

Portable Acetylene Generators

The Davis Portable Acetylene pressure generators are made in two sizes, 25 and 50 lb. (11 and 23 kg.) carbide capacity. They are mounted on a low, four wheel, steel truck, and are as complete in all details as the regular stationary type generators, having the same general construction. A steel tool box on the truck furnishes storage for the torches, regulators, and welding accessories. A rack provides space for five or six oxygen cylinders.

These generators are especially designed for transportation, being equipped with an automatic locking device to prevent the feeding mechanism from operating when the truck is being moved.

Either of the outfits provides a very efficient and convenient portable gas supply equipment for welding and cutting. They are especially adapted for use in large plants and yards such as bridge plants, ship yards, railway repair shops, and junk yards, where it is necessary to move them frequently, and where permanent piping may not be desirable.

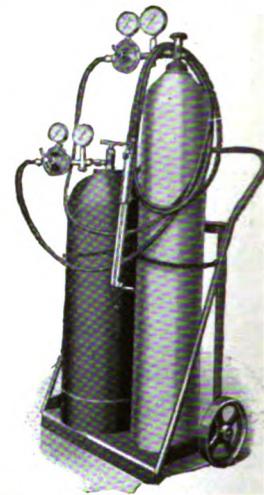


FIG. 9. PORTABLE OUTFIT

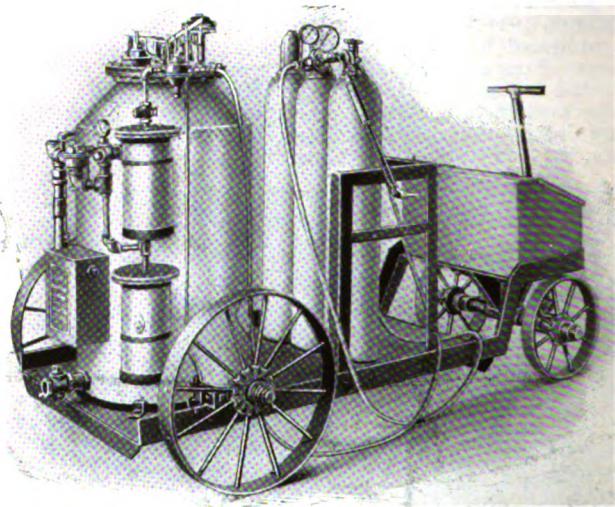


FIG. 10. NO. C25-P ACETYLENE GENERATOR

Radiographs

A general purpose machine adaptable to widely varying shop conditions, and used in boiler shops, shipyards, and fabricating plants for cutting to straight line and circle layouts in steel plates of any thicknesses up to 18 or 20 in. (45 or 50 cm.) is the Davis Bournonville Radiograph.

It is a motor-driven machine carrying an oxy-acetylene or oxy-hydrogen cutting torch, mounted on three wheels and operating

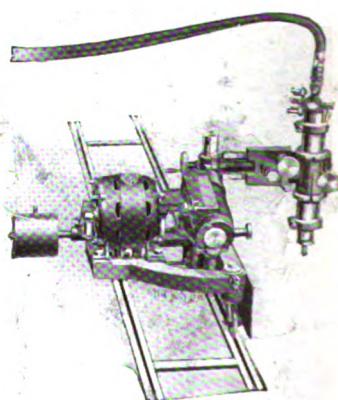


FIG. 11. RADIAGRAPH

on parallel tracks when cutting to straight lines. The tracks are dispensed with when cutting circle layouts and means are provided for guiding the torch in circular paths of any radius ordinarily required in ship or boiler work. The feed motion may be varied from 2 to 18 in. (5 to 45 cm.) per minute traverse, the speed depending on the thickness of the metal cut. The Radiograph is portable, weighing about 50 lb. (23 kg.) complete. The motor operates on any ordinary line or power circuit, either direct current or alternating current.

Duographs

Machine welding of cylinders, tanks, drums, and containers with the torch is accomplished rapidly on the Davis-Bournonville Duograph. This machine comprises a two-arm turret work-holding fixture and a power-actuated slide carrying the welding torches. One torch only is required for thin

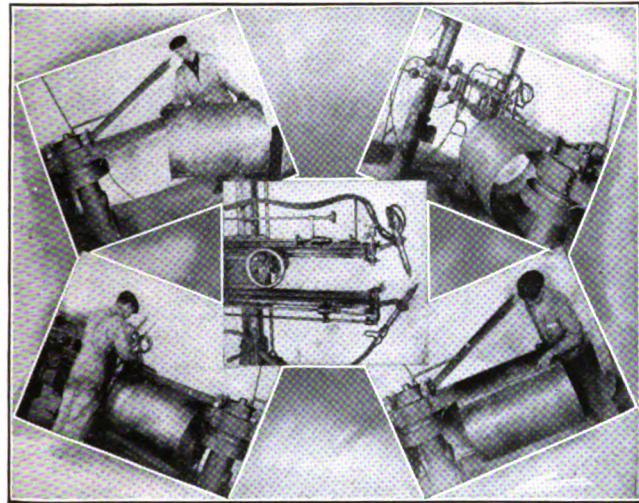


FIG. 12. DUOGRAPH

welding but two, one above and one below the seam, are used for welding the heavier gauges. The turret arms are provided with clamps for holding the sheets to be welded, and are water-cooled to prevent overheating. One arm of the turret stands at the welding station while the other is at the loading and unloading station. Thus the operator welds continuously while his helper removes the welded work and replaces it with rolled sheets to be welded. The speed of the torch travel is fixed for any given thickness of metal. Means are provided for changing the speed of torch travel to accommodate various thicknesses. The No. C1 Duograph welds 36-in. (91 cm.) seams and will handle containers from 12 to 36 in. (30 to 91 cm.) diameter. The No. 2 machine welds a 54 in. (137 cm.) seam.

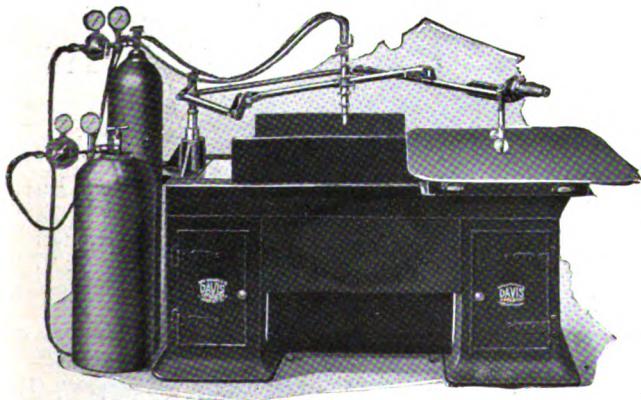


FIG. 13. NO. C1 OXYGRAPH

Oxygraphs

The Davis-Bournonville Oxygraph is a hand-guided cutting machine with power feed. A cutting torch mounted on a pantograph and provided with a motor-driven tracing

wheel, the whole supported on a cabinet table, is the main feature of the No. C1 Oxygraph. The copy to be followed is laid on the tracing table, and the design is cut with the torch one-half the size of the drawing. The motor-driven tracing wheel provides the uniform feed motion so essential to smooth cutting. The speed of cutting varies from 2 to 18 in. (5 to 45 cm.) per minute, according to the thickness of the steel.

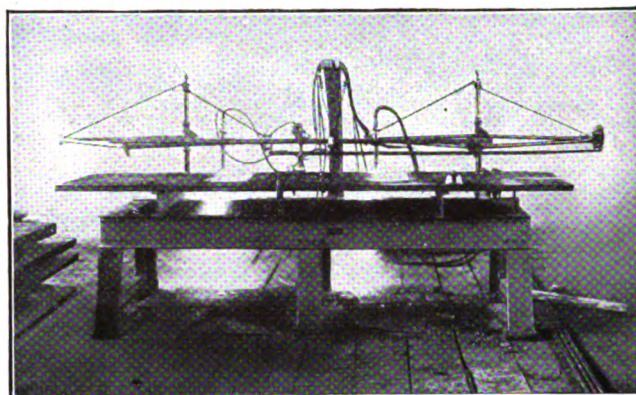


FIG. 14. NO. C2 OXYGRAPH

The No. C2 Oxygraph is designed for large, heavy work and is made with a double pantograph, carrying two cutting torches for making duplicate cuts simultaneously. The positions of the torches and tracing wheel are adjustable. The No. C2 Oxygraph reproduces the cut of equal size with the pattern, or in a one-to-one ratio. It is used for cutting patterns on one or several stacked steel plates simultaneously, such as the frames of mine locomotives and similar parts.

Pyrographs

Flanged boiler heads must be trimmed and beveled to the calking angle after the flanging operation. The Davis-Bournonville Pyrograph is a boiler shop cutting machine, designed especially for trimming and beveling flanged sheets of all kinds in one operation. It comprises a long, radial arm supported on a vertical post and carrying a carriage, on

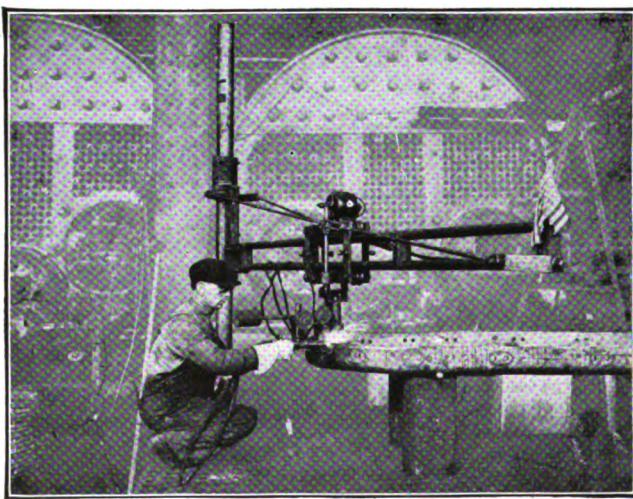


FIG. 15. PYROGRAPH

which is mounted an adjustable cutting torch. The carriage and radial arm are supported on ball bearings. The torch is mounted on a compound slide-rest and is adjustable to any angle from the vertical to the horizontal. The feed mechanism consists of three rollers, driven by an electric motor through worm reducing gears. The feed rollers grip the flange to be trimmed and roll over it at a rate fixed by the gear ratio employed. The feed follows flanges of any shape, while the torch trims and bevels the flange to the required length and angle. The rate of trimming and beveling flanged work is tenfold that of chipping.

DAVIS-BOURNONVILLE COMPANY

FABRICANTES DE APARATOS DE SOLDAR Y CORTAR
POR EL PROCEDIMIENTO DEL OXIAACETILENO.

Dirección Cablegráfica: "DAVACO," Jersey City

Clave del Iron Age, en la Página 10.

PRODUCTOS.—INSTALACIONES DE GENERAR Y COMPRIMIR ACETILENO; INSTALACIONES DE OXIGENO E HIDROGENO; APARATOS DE CORTAR POR EL PROCESO OXIAACETILENO Y OXIHIDROGENO.

DESCRIPCION.—Los sopletes oxiacetilénicos han dado excelentes resultados en la mayoría de las industrias, tales como la siderurgia, la soldadura de tubos, barriles y depósitos de acero, en reparaciones y construcciones en general, fundiciones, altos hornos, astilleros, minas y talleres de locomotoras y vagones.

Los sopletes oxiacetilénico para cortar se emplean también en casi todas las industrias siderúrgicas, especialmente en la fabricación de calderas y construcciones navales. Son muy eficaces para cortar calderas viejas, desmontar maquinaria, puentes y construcciones de acero, de cualquier género.

El Gobierno Americano compró una gran cantidad de aparatos Davies-Bournonville para el ejército y armada expedicionarios, lo mismo hizo la Emergency Fleet Corporation para sus astilleros. Se les emplea en todos los astilleros de la Armada de los Estados Unidos y por las mayores fábricas siderúrgicas del país.

La instalación comprende un sistema completo para la producción y distribución del acetileno, oxígeno e hidrógeno, y para soldar y cortar con aparatos fijos o portátiles; maquinaria especial para soldar tubos, barriles y depósitos, piezas pequeñas y para efectuar cortes automáticamente.

GENERADORES DE ACETILENO.—Los sopletes de soldar y cortar Davies-Bournonville de presión positiva, requieren que ambos gases estén bajo presiones de trabajo, independientes entre sí. El generador de acetileno con presión se construye para este objeto. Es completo, compacto, y automático. Dichos generadores se hacen para capacidades de 22.7; 45.4; 90.8 y 136.2 kgs. (50, 100, 200 y 300 lbs.). Los generadores portátiles van montados en una carretilla baja de cuatro ruedas y se hacen para capacidades de 11.3 y 22.7 kgs. de carburo (25 y 50 lbs.).

INSTALACIONES PARA COMPRESIÓN ACETILENO.—La batería del sistema de compresión comprende un generador especial de acetileno con presión, gasómetro, aparatos de purificar y compresor dentro cámaras de refrigerar, con agua. Los cilindros portátiles de gas, dentro de los cuales se comprime el acetileno, están llenos de una substancia porosa saturada con acetona, la que absorbe el acetileno. Los cilindros no contienen gas libre.

INSTALACIONES DE OXIGENO E HIDROGENO.—Las células de generar oxígeno e hidrógeno, por medio de la electrolisis del agua, se construyen en tres tamaños, que funcionan, respectivamente, con 250, 500 y 1000 amperios. Un sistema de gobierno, todo automático hace funcionar el compresor, cuando el depósito del gas está lleno, y hace pasar a éste a los tanques de recepción. Cuando los depósitos están llenos, desconecta el motor-generador y detiene la producción del gas cuando el depósito de este y los tanques de recepción están todos llenos.

LOS SOPLETES DE SOLDAR Y CORTAR.—Los sopletes Davies-Bournonville consumen oxígeno y acetileno bajo presiones de trabajo independientes, variando desde 1 a 8 lbs. por pulgada² para el acetileno, en los sopletes de soldar. La presión del oxígeno para cortar varía desde 10 a 150 lbs., según sea el espesor del metal que se corta. Los sopletes tienen boquilla permutable y graduable para los diversos espesores del metal; cada tamaño de boquilla funciona con la presión necesaria de gas. Los graduadores de presión mantienen la presión de trabajo requerida.

UNIDADES PORTÁTILES.—Los equipos portátiles Davies-Bournonville, de soldar y cortar, comprenden una carretilla de mano de dos ruedas, que transporta dos cilindros para el oxígeno e hidrógeno, provistos de graduadores de presión, manguera y soplete. Estas carretillas se construyen en tres estilos diferentes; a saber, carretilla cerrada, carretilla abierta, con ruedas grandes, y carretilla abierta, con ruedas pequeñas.

RADIOGRAFOS.—El radiógrafo Davies-Bournonville es un aparato para usos generales en los talleres de calderería, astilleros y fábricas de construcciones de acero, donde se les emplea para cortar, siguiendo trazos rectos o circulares en chapas de acero de cualquier espesor hasta 450 a 508 mm. (18 a 20 pulg.). El radiógrafo es portátil, y el motor puede acoplarse con cualquier línea de electricidad comercial o circuito de fuerza, ya sea corriente alterna o continua.

DUOGRAFO.—El duógrafo de construcción Davies-Bournonville se compone de un aparato de dos brazos, para sujetar el trabajo, y de una corredera accionada por transmisión motriz, que lleva los sopletes de soldar. El duógrafo se emplea para soldar barriles y otros depósitos de acero.

OXIGRAFOS.—El oxígrafo es una máquina de cortar, con avance motor y manipulación. El soplete de cortar está montado en un pantógrafo y provisto de una ruedecilla de guiar accionada por el motor; el dispositivo completo está montado sobre una mesa. El original que se va a copiar se coloca sobre la mesa de trazar, y el dibujo se corta con el soplete en su tamaño natural o a media escala.

PIROGRAFOS.—El pirógrafo Davies-Bournonville se emplea para recortar y achaflanar chapas de calderas, en una sola operación. El pirógrafo elimina la cortadura de la chapa por medio del cincel y martillo, constituyendo, por tanto, una gran economía.

DAVIS-BOURNONVILLE COMPANY

FABRICANTS D'APPAREILS OXY-ACETYLENIQUES ET
D'APPAREILS POUR SOUDER ET DECOUPER.
JERSEY CITY, N. J., ETATS-UNIS
Adresse télégraphique: "DAVACO", Jersey City.
Code de l'Iron Age à la page 14.

PRODUITS.—GÉNÉRATEURS D'ACÉTYLÈNE AVEC COMPRESEURS; GÉNÉRATEURS D'OXYGÈNE ET APPAREILS À DECOUPER PAR LES PROCÉDÉS OXY-ACÉTYLENIQUE ET OXY-HYDROGÉNIQUE

DESCRIPTION.—Les chalumeaux oxy-acétyléniques sont employés avec succès dans n'importe quelle branche d'industrie pour le travail sur métaux; soit dans la manufacture des pièces métalliques, soit pour la soudure autogène des tubes, ou pour les tonneaux et les récipients en acier, et dans le travail général de réparation et de construction et dans les ateliers de construction de wagons et les mines.

Les chalumeaux oxy-acétyléniques et oxy-hydrogéniques sont également employés dans presque toutes les branches d'industrie pour le travail sur métaux, spécialement dans la fabrication des chaudières et dans la construction des bateaux; leur emploi est efficace lorsqu'il s'agit de couper de vieilles chaudières ou démolir des machines, des ponts ou des charpentes d'acier de toutes sortes. Les appareils "Davis-Bournonville" sont employés dans tous les chantiers de la marine et dans tous les plus grands ateliers des Etats-Unis.

L'équipement comprend les dispositifs pour la soudure autogène de tubes, de tonneaux, de récipients, et de petites pièces, et aussi pour le découpage mécanique.

GÉNÉRATEURS D'ACÉTYLÈNE.—Les chalumeaux "Davis-Bournonville" pour la soudure autogène et pour le découpage sont à pression constante et nécessitent une pression moyenne indépendante pour chacun des deux gaz employés. Le générateur d'acétylène "Davis-Bournonville" a été conçu pour cet usage. Il est complet en lui-même, compact et automatique. Nous fournissons des générateurs de différentes capacités, pouvant contenir respectivement un poids de carbure de calcium de 50, 100, 200 ou 300 livres anglaises (correspondant à 22.7-45.4-90.8-136.2 kgs.). Nous fournissons également des générateurs portatifs, montés sur chariot bas de quatre roues, et pouvant contenir 25 ou 50 livres (anglaises) de carbure de calcium (correspondant à 11.35 ou 22.7 kgs.).

INSTALLATIONS POUR LA COMPRESSION DE L'ACÉTYLÈNE.—Une de ces installations comprend un générateur spécial d'acétylène, un gazomètre, un appareil de purification et un compresseur à trois phases avec refroidissement par eau. Les tubes portatifs dans lesquels l'acétylène est comprimé renferment une substance poreuse saturée d'acétone par laquelle l'acétylène est absorbé; de cette façon, les tubes ne contiennent pas de gaz libre.

INSTALLATIONS POUR LA PRODUCTION DE L'OXYGÈNE ET DE L'HYDROGÈNE.—Les éléments "Davis-Bournonville" pour la production de l'oxygène et de l'hydrogène obtenus par la décomposition de l'eau par le courant électrique sont fabriqués en trois tailles différentes fonctionnant respectivement avec un courant de 250, 500 ou 1,000 ampères. Un système complet et automatique de contrôle assure la mise en marche du compresseur lorsque le récipient à gaz est rempli, arrête le compresseur lorsque les réservoirs sont pleins, et, lorsque le récipient à gaz et les réservoirs sont remplis, produit l'arrêt du moteur et interrompt ainsi la production du gaz.

CHALUMEAUX EMPLOYÉS POUR LA SOUDURE AUTOGÈNE ET POUR LE DECOUPAGE.—Les chalumeaux "Davis-Bournonville" emploient l'oxygène et l'acétylène comprimés sous une pression moyenne indépendante variant de 2 à 24 livres (anglaises) par pouce carré (0.14 à 1.70 kg. par cm.) pour l'oxygène, et de 1 à 8 livres (anglaises) par pouce carré (0.07 à 0.60 kg. par cm.) pour l'acétylène (pression dans les chalumeaux). La pression d'oxygène pour le découpage varie de 10 à 50 livres (anglaises) (0.70 à 3.50 kg.) selon l'épaisseur du métal à couper.

APPAREILS PORTATIFS.—Les appareils portatifs "Davis-Bournonville" pour soudure autogène et pour découpage sont composés de chariots à deux roues, poussés à la main, portant deux tubes d'acétylène y d'oxygène munis de régulateurs de pression, d'un tuyau flexible et d'un chalumeau.

APPAREILS "RADIGRAPHS".—L'appareil "Radiograph" "Davis-Bournonville" est un appareil à découper d'un usage général employé dans les ateliers de fabrication de chaudières, les chantiers de construction et dans les ateliers de fabrication pour couper suivant une ligne droite ou un cercle des plaques d'acier d'une épaisseur pouvant atteindre 18 à 20 pouces (45 à 50 cm.). L'appareil "Radiograph" est un appareil portatif.

APPAREILS "DUOGRAPH".—L'appareil "Duograph" est employé pour la soudure autogène des tonneaux et autres réservoirs d'acier.

APPAREILS "OXYGRAPHS".—L'appareil "Oxygraph" "Davis-Bournonville" est un appareil guidé à la main et dont l'avance est opérée mécaniquement. Le chalumeau est monté sur un pantographe et est pourvu d'une roue marquant la ligne à suivre, opérée mécaniquement.

APPAREILS "PYROGRAPHS".—L'appareil "Pyrograph" "Davis-Bournonville" est employé pour équerrir y biseauter les plaques de chaudières à nervures de toutes sortes, en une seule opération. L'appareil "Pyrograph" supprime l'emploi du marteau ou du burin pour le découpage d'une nervure, et son emploi signifie une économie de travail.